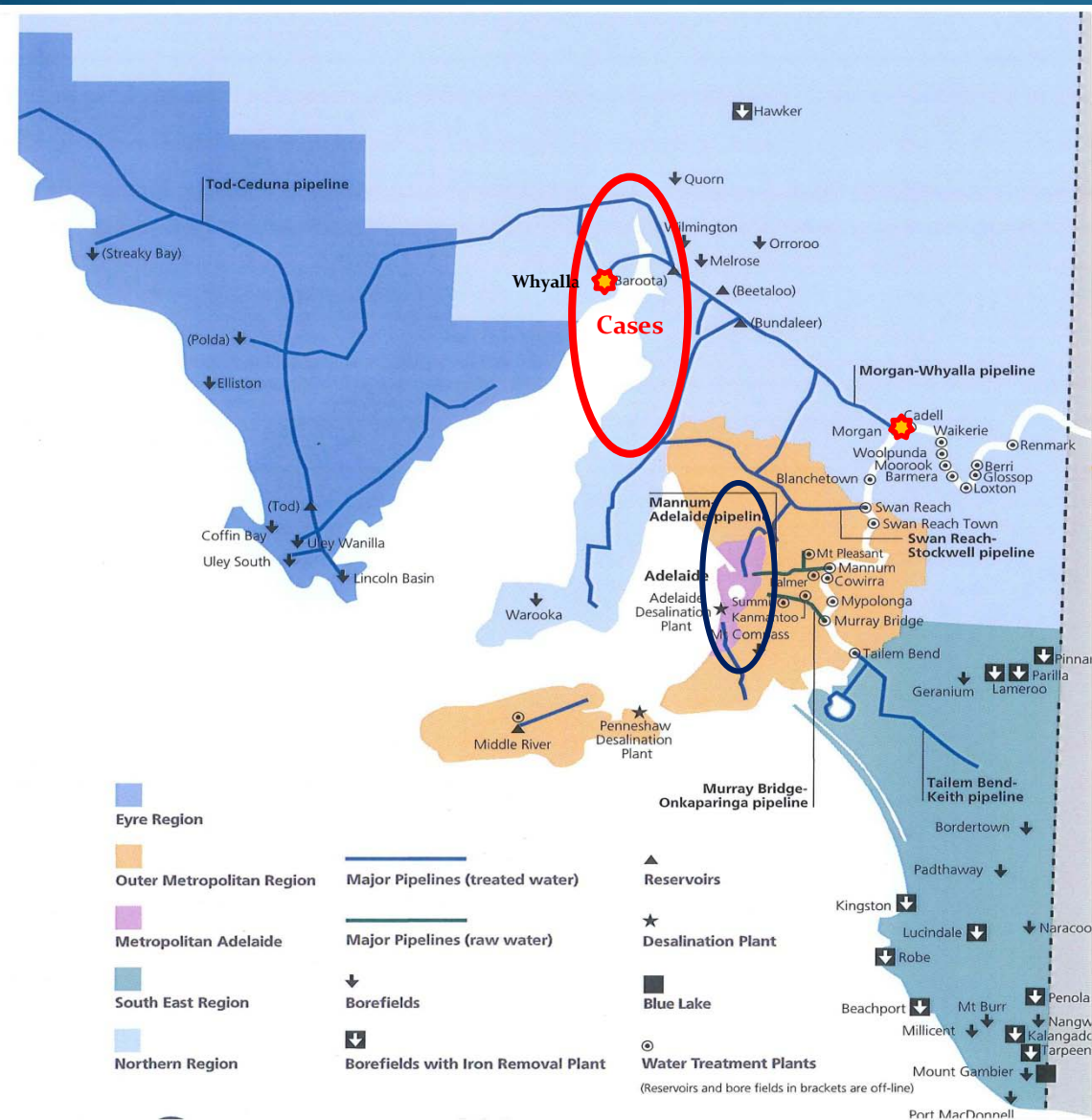


South Australia

- Population 1.6M
- 1.3M in Adelaide
- 1M Sq Km
- Drinking water
 - 55% River Murray
 - 23% Surface
 - 16% Desal
 - 6% Groundwater
- Rural areas supplied with long above ground pipelines up to 500km most involving R.Murray water



Source: SA Water

History

- 💧 13-14 cases of primary amoebic meningitis. All in Mid North and usually associated with extended bouts of hot weather $>37^{\circ}\text{C}$
- 💧 Causative agent identified in SA with contributions from Carter, Fowler, Anderson and Jamieson
- 💧 *Naegleria fowleri* first identified in tap water in 1972. Subsequently shown to be endemic in rural drinking water supplies. Causal link likely but not established
- 💧 Last case January 1981 in Whyalla. Young boy
- 💧 Government decided that statewide action required to prevent further cases

Response

- 💧 In 1981 all rural supplies unfiltered but chlorinated. Some systems included multiple chlorinators to try and maintain a chlorine residual.
- 💧 Massive increase in sampling and testing. Additional chlorination stations were added
- 💧 Publicity campaigns about care with swimming and don't get water up your nose (from pools and hoses)
- 💧 Chloramination introduced in 1983
- 💧 Filtration commenced in 1986

Results

- 💧 Chloramination has been maintained with an aim of achieving a minimum residual of 1 mg/L (as total chlorine). This serves the dual purpose of maintaining control over *Naegleria fowleri* and preventing nitrification
- 💧 In an 18 month period before and after the introduction of chloramination in 3 supplies detections of *N.fowleri* fell from 40/701 samples (5.7%) to 1 from 580 (0.2%) samples. Less effective against other amoeba (remained at about 50%)
- 💧 A concentration of 2700 orgs/L at the end of a distribution system was eliminated by the arrival of chloramination
- 💧 The last detection of *N.fowleri* was in 1998 in a Storage Tank sludge

Further monitoring

- 💧 Sampling continues from the River Murray, Storage Tanks and customers taps (if residual <1 mg/L)
- 💧 Sampling also undertaken in undisinfected supplies sourced from the River Murray (occasional detects) and other water supplies in the State (no detects)
- 💧 *N.fowleri* only detected in supplies sourced from the River Murray but never detected in the River

Methods

- 💧 Detection based on collection 500mL -1 L samples.
- 💧 Samples mixed with *E.coli* and then centrifuged
- 💧 Mixture plated on agar plates – incubated for 48-72hrs at 44°C
- 💧 Amoeba speciated using PCR

Where now

- 💧 As a regulator our requirement is that routine *Naegleria* monitoring continues. The organism remains a concern. Testing must include speciation to *N.fowleri*
- 💧 Occasional investigations of other supplies will continue
- 💧 The *Naegleria* laboratory became the protozoa laboratory and in the 1990's greatly expanded capacity for *Cryptosporidium* testing